commonly met with even by entomologists because of the restricted period of its emergence.

The authors could collect in Calicut, Kerala, considerable numbers of this insect only during the first two weeks of March, 1968, before and after which time, the insects could not be found. The same observation was made during the year 1967 also. From this, it is inferred that, *Croce filipennis* Westw. has only one generation in a year (Imms 1911); that its emergence is apparently restricted to a short period around the first two weeks of March in Calicut; and that the insect has a relatively short span of life, definitely not exceeding two weeks.

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21. EGG 'DIAPAUSE' OF *HIEROGLYPHUS NIGROREPLETUS* BOLIVAR (ORTHOPTERA: ACRIDIDAE)

Hieroglyphus nigrorepletus Bolivar, commonly called 'phadka', is a serious pest of *Zea mays*, maize, *Sorghum vulgare* jawar, *Pennisetum typhoidium*, bajra in India. Investigations on different aspects of this grasshopper have been published by Bhatia 1949; Pradhan & Peswani 1961; Pruthi 1949; Rao & Cherian 1940; and Roonwal 1945. According to Roonwal (1945) the incubation period in nature is roughly of ten months. This leads to the presumption that the hatching period is lengthened on account of egg diapause. Pradhan & Peswani (1961) attempted in the field as well as under controlled conditions to break this egg diapause of *H. nigrorepletus*, without success. In the course of our study on the digestive physiology of *H. nigrorepletus* we were successful in shortening the incubation period significantly in order to get regular supply of various stages of this grasshopper throughout the year.

Two sets of egg pods of *H. nigrorepletus* were selected for the experiments. The first set contained freshly laid egg pods collected from the field in September. The second set consisted of the egg pods laid by the adults in oviposition tubes (4″×1″) under controlled conditions in the same month. Each egg pod generally has 45 to 55 eggs in it. On examination it was observed that in each egg pod the eggs were covered with a distinct brownish layer made up of the secretion of the accessory glands mixed with soil particles. These sets of egg pods were separately kept buried in loose soil (mixture of sand and earth) in the incubation tubes which were kept at 38°C ± 1°C and relative humidity ranging between 60% to 70%. Further, the soil of the incubation tubes was periodically watered so as to keep it damp and to prevent dessication.

The observations are based on the experiments conducted during three consecutive years. It showed that 88% of the eggs laid under controlled conditions hatched out at an average of 30 days. Likewise, the eggs collected from the fields and kept under identical controlled conditions also took the same period, but in this case the percentage of hatching was approximately eighty per cent.

It is, therefore, concluded that the egg diapause (as it is called by Pradhan & Peswani 1961) in *H. nigrorepletus* can definitely be broken under effective temperature and humidity (i.e. 38°C and R.H. 60% to 70%) and a requisite moisture of the soil containing the egg pods. This conclusion is at variance with that arrived at by Pradhan & Peswani (op. cit.) who maintained that the long incubation period of these eggs was due to egg diapause which remained irresponsive to the artificial adjustments in physical factors. They further elaborated it by holding the seasonal factors related to the onset of monsoon as only responsible for hatching, as is evident from their statement, 'if the egg pods failed to come in contact with moisture between June and August the eggs would not hatch later that year but would remain in that condition till the next season'.

We conclude that regular wetting of the soil is responsible for making the hard outer covering of the pods pervious and facilitates moisture absorption by the eggs. This process becomes effective in stimulating the development and growth of the embryo at a quicker pace under high temperature and humidity. Keeping in view the present observations on the role of physical factors on the development of eggs of *H. nigrorepletus* it is suggested that the term 'quiescence' would be more appropriate than 'diapause' for the long incubation period of *H. nigrorepletus* eggs which are laid at the end of monsoon season.

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22. NEW RECORD OF A PHYTOSEIID MITE, *AMBLYSEIUS FINLANDICUS* OUDM, OCCURRING IN SUGARCANE WITH NOTES ON ITS LIFE HISTORY AND BIONOMICS

(*With a photograph*)

In India four different species of phytophagous mites have been recorded on sugarcane. Out of these, two are spider mites (Tetranychidae) which commonly damage the crop, and the other two species are the rust mite and the sheath gall mite belonging to the family Eryophydae. Field observations during 1965 in the Sugarcane Research Station, Bhubaneswar, Orissa, revealed that another species i.e., *Amblyseius finlandicus* Oudm (Phytoseiidae) was associated with sugarcane along with the spider mite *Paratetranychus indicus* Hirst, and caused some injury to the plants.

The occurrence of *Amblyseius finlandicus* on sugarcane has not been reported earlier. Accounts of its biology and taxonomic description are found in the reports of Collyer (1956) and Chant (1957, 1958, 1959). *A. finlandicus* is active in the field throughout the year, and feeds on leaf sap and preys upon the spider mite *P. indicus* as well. The present study was initiated to obtain detailed knowledge of its life history and bionomics on different kinds of food materials, and its possible significance in relation to its role as a predator of pests or pest of sugarcane.